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09/718,851	11/22/2000	Steve J. Shattil	CIDIV001	3170
7590	03/23/2006		EXAMINER	
Steven J. Shattil 15 S. 33rd Street Boulder, CO 80305			MEW, KEVIN D	
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Please find below and/or attached an Office communication concerning this application or proceeding.

A

Office Action Summary	Application No. 09/718,851	Applicant(s) SHATTIL, STEVE J.	
	Examiner Kevin Mew	Art Unit 2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2005.
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1-17 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

Response to Amendment

1. Applicant's Remarks/Arguments filed on 11/3/2005 regarding claims 1-17 have been considered and claims 1-17 are currently pending.
2. Acknowledgment is made of the amended claims 12 and 16.

Claim Objections

Claims 6-9, 11-13, 16-17 are objected to because of the following informalities:

In line 5, claim 6, the term "being adapted to provide" contains language that suggests or makes optional and does not limit the scope of the claim limitation. This term is suggested to be replaced with the term "provides."

In line 2, claim 7, the term "adapted to generate" contains language that suggests or makes optional and does not limit the scope of the claim limitation. This term is suggested to be replaced with the term "generates."

In line 3, claim 8, the term "adapted to effect" contains language that suggests or makes optional and does not limit the scope of the claim limitation. This term is suggested to be replaced with the term "effects."

In line 5, claim 9, the term "being adapted to provide" contains language that suggests or makes optional and does not limit the scope of the claim limitation. This term is suggested to be replaced with the term "provides."

In line 3, claim 11, the term “adapted to effect” contains language that suggests or makes optional and does not limit the scope of the claim limitation. This term is suggested to be replaced with the term “effects.”

In line 2, claim 12, the term “adapted to be responsive” contains language that suggests or makes optional and does not limit the scope of the claim limitation. This term is suggested to be replaced with the term “is responsive.”

In line 10, claim 12, the term “adapted to separate” contains language that suggests or makes optional and does not limit the scope of the claim limitation. This term is suggested to be replaced with the term “separates.”

In line 2, claim 13, the term “adapted to effect” contains language that suggests or makes optional and does not limit the scope of the claim limitation. This term is suggested to be replaced with the term “effects.”

In line 3, claim 16, the term “adapted to be responsive” contains language that suggests or makes optional and does not limit the scope of the claim limitation. This term is suggested to be replaced with the term “is responsive.”

In line 9, claim 16, the term “adapted to separate” contains language that suggests or makes optional and does not limit the scope of the claim limitation. This term is suggested to be replaced with the term “separates.”

In line 2, claim 17, the term “adapted to effect” contains language that suggests or makes optional and does not limit the scope of the claim limitation. This term is suggested to be replaced with the term “effects.”

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. **Claims 1-17** are rejected under 35 U.S.C. 102(e) as being anticipated by Agee et al. (USP 6,128,276).

Regarding claim 1, Agee discloses in a carrier interferometry (CI) communications system (**multiple access communication system comprising at least one spreader for redundantly modulating at least two RF carriers**, col. 30, lines 49-67), a method for communicating comprising:

providing for modulation of at least one data symbol (**modulation of first data**) onto a plurality of carrier signals (**with at least two RF carriers**, col. 30, lines 49-67), the carrier signals having different values of at least one diversity parameter (**stacked-carrier spread spectrum signals have frequency diversity or spectral diversity**, col. 5, lines 1-7);

providing for coupling the modulated carrier signals into at least one communication channel (**a plurality of channels going into the summer 170**, col. 10, lines 21-50 and Fig. 7A) from at least one transmitter element (**stacked-carrier spread spectrum transmitter**, col. 10, lines 21-50, Fig. 7A),

providing for reception of the coupled carrier signals via at least one receiver element **(stacked-carrier spread spectrum receiver for receiving the coupled carrier signals, col. 11, lines 16-32 and Fig. 7B),**

providing for spatial processing of the received signals **(performs spatial filtering of the received data signal, col. 15, lines 1-5)** with respect to at least one diversity parameter space **(with respect to multi-antenna reception, Fig. 12)** to separate at least one desired data symbol from at least one interfering signal **(the received data packet transmitted from each user is extracted from the received interference environment, col. 14, lines 58-67 and col. 15, lines 7-17).**

Regarding claim 2, Agee discloses the CI communication method **(multiple access communication system comprising at least one spreader for redundantly modulating at least two RF carriers, col. 30, lines 49-67)** recited in claim 1 wherein the step of providing for modulation includes providing for weighting of the carrier signals **(adjusting the in-phase and quadrature carriers amplitudes via the gain-controlled amplifiers 162 and 164, col. 10, lines 30-38 and Fig. 7A)** to generate a predetermined superposition signal **(before generating a combined signal, col. 10, lines 32-43).**

Regarding claim 3, Agee discloses the CI communication method **(multiple access communication system comprising at least one spreader for redundantly modulating at least two RF carriers, col. 30, lines 49-67)** recited in claim 1 wherein the steps of providing for modulation and providing for reception comprise at least one of a set of transmission protocols

including time-division multiple access, code-division multiple access (CDMA), frequency-division multiple access, time-offset multiplexing, frequency-hopping spread spectrum, orthogonal frequency division multiplexing (OFDM), multi-tone CDMA, multi-carrier CDMA, OFDM-CDMA, synchronized CDMA, and phase-division multiplexing (CDMA, col. 25, lines 35-40).

Regarding claim 4, Agee discloses the CI communication method (**multiple access communication system comprising at least one spreader for redundantly modulating at least two RF carriers**, col. 30, lines 49-67) recited in claim 1 wherein the step of providing for spatial processing (**spatial filtering**) includes providing for multi-channel detection (**multiple channel detection**, col. 12, lines 3-14 and Fig. 9).

Regarding claim 5, Agee discloses the CI communication method (**multiple access communication system comprising at least one spreader for redundantly modulating at least two RF carriers**, col. 30, lines 49-67) recited in claim 1 wherein the step of providing for spatial processing includes providing for at least one superposition (**stacked**) of the received signals (**spatial filtering provides for stacked-carrier spread spectrum signals**, see col. 9, lines 20-67).

Regarding claim 6, Agee discloses a CI transmission system (**multiple access communication system comprising at least one spreader for redundantly modulating at least two RF carriers**, col. 30, lines 49-67) including:

a carrier-signal generator (**stacked carrier spread-spectrum transmitter**, element 150, Fig. 7A, see Fig. 2) capable of generating a plurality of carrier signals (**generating at least two RF carriers**, col. 30, lines 49-67),

a modulator (**spreader**, col. 30, lines 49-67) capable of redundantly modulating at least one information signal onto a plurality of the carrier signal(s) (**for redundantly modulate the amplitude and phase of at least two of the RF carriers with first data**, col. 30, lines 49-67) wherein the improvement comprises at least one of the carrier-signal generator (radio transmitters) and the modulator (**spreader**) provides the modulated carrier signal(s) with an incremental phase relationship (**spreader is connected to the transmitter, see col. 30 and includes a 90 degree phase shifter**, lines 49-67 and Fig. 7A) that facilitates separation of multiple information signals modulated onto the same carrier signals by orthogonally positioning data-modulated pulse waveform produced from a superposition of the carrier signals (**in-phase carrier is orthogonal to quadrature carrier signal**, see col. 6, lines 31-67), and

a transmitter (**transceiver front-end**, element 264, Fig. 9) having at least one transmitter element (**antenna array**, elements 263, 264, Fig. 9), the transmitter being capable of coupling the modulated carrier signals into at least one communication channel (**transceiver front-end couples the spreaded carrier signals into frequency channels**, Fig. 9).

Regarding claim 7, Agee discloses the CI transmission system (**multiple access communication system comprising at least one spreader for redundantly modulating at least two RF carriers**, col. 30, lines 49-67) recited in claim 6 wherein the carrier-signal generator (**stacked carrier spread-spectrum transmitter**, element 150, Fig. 7A) generates

carrier signals that are each distinguished by different values of at least one diversity parameter **(stacked-carrier spread spectrum signals have frequency diversity or spectral diversity, col. 5, lines 1-7).**

Regarding claim 8, Agee discloses the CI transmission system **(multiple access communication system comprising at least one spreader for redundantly modulating at least two RF carriers, col. 30, lines 49-67)** recited in claim 6 wherein at least one of the carrier-signal generator, the modulator, and the transmitter **(T/R front-end, element 264, Fig. 9)** includes a spatial processor **(antenna array)** effects spatial processing of at least one of the modulated carrier signals **(to effect spatial processing of modulated transmit data, col. 12, lines 3-14, Fig. 9).**

Regarding claim 9, Agee discloses a CI transmission system **(multiple access communication system comprising at least one spreader for redundantly modulating at least two RF carriers, col. 30, lines 49-67)** including:

a carrier-signal generator **(radio transmitter, Fig. 9)** capable of generating at least one carrier signal **(for generating a plurality of RF carriers, col. 30, lines 49-67),**

a modulator **(spreader, col. 30, lines 49-67)** capable of redundantly modulating at least one information signal onto a plurality of the carrier signal(s) **(for redundantly modulate the amplitude and phase of at least two of the RF carriers with first data, col. 30, lines 49-67)** wherein the improvement comprises at least one of the carrier-signal generator **(radio transmitters)** and the modulator **(spreader)** provides the modulated carrier signal(s) with an

incremental phase relationship (**spreader is connected to the transmitter**, see col. 30 and includes a 90 degree phase shifter, lines 49-67 and Fig. 7A) that facilitates separation of multiple information signals modulated onto the same carrier signals by orthogonally positioning data-modulated pulse waveform produced from a superposition of the carrier signals (**in-phase carrier is orthogonal to quadrature carrier signal**, see col. 6, lines 31-67), and

a transmitter (**transceiver T/R front-end**, element 264, Fig. 9) having at least one transmitter element (antenna array, elements 263, 264, Fig. 9), the transmitter being capable of coupling the modulated carrier signals into at least one communication channel (**transceiver front-end couples the spreaded carrier signals into frequency channels**, Fig. 9).

Regarding claim 10, Agee discloses the CI transmission system (**multiple access communication system comprising at least one spreader for redundantly modulating at least two RF carriers**, col. 30, lines 49-67) recited in claim 9 wherein the carrier-signal generator (**radio transmitter**, see Fig. 2) is capable of generating carrier signals that are each distinguished by different values of at least one diversity parameter (**for generating a plurality of RF carriers have frequency diversity or spectral diversity**, col. 5, lines 1-7, col. 30, lines 49-67).

Regarding claim 11, Agee discloses the CI transmission system (**multiple access communication system comprising at least one spreader for redundantly modulating at least two RF carriers**, col. 30, lines 49-67) recited in claim 9 wherein at least one of the carrier-signal generator, the modulator, and the transmitter (**T/R front-end**, element 264, Fig. 9)

includes a spatial processor (**antenna array**) effects spatial processing of at least one of the modulated carrier signals (**to effect spatial processing of modulated transmit data**, col. 12, lines 3-14, Fig. 9).

Regarding claim 12, Agee discloses a CI receiver system (**multiple access communication system comprising at least one spreader for redundantly modulating at least two RF carriers**, col. 30, lines 49-67) including:

a receiver (**Beam-forming receiver**, Fig. 12) having at least one receiver element (demultiplexer bank, element 330, Fig. 12), the receiver is responsive to a plurality of information-modulated carrier signals (**the beam-forming receiver receives data carriers**, Fig. 12) from at least one communication channel (**receives a plurality of modulated carrier signals**, see Fig. 3) to generate a plurality of received modulated carrier signals (**the combiner despreads the original baseband symbol tones from the received data set**, col. 14, lines 64-67, col. 15, lines 1-5), and

a combiner (**a bank of linear combiners**, element 332, Fig. 12) coupled to the receiver, the combiner capable of combining the received modulated carrier signals to produce a superposition of the received modulated carrier signals (**the combiner produces a superposition of the received modulated signals**, Fig. 12) characterized by at least a sequence of pulses (**discrete multi-tones DMT**, col. 13, lines 16-29 and Fig. 11) for separating at least one desired information symbol from at least one interfering signal (**the combiners remove the co-channel interference from the received data set**, col. 14, lines 39-67, col. 15, lines 1-16), and

a multi-channel detector (**demodulator**, element 336, Fig. 12) separates at least one desired signal from at least one interfering signal (**estimates the transmitted message symbols from the received interference**, col. 15, lines 1-20).

Regarding claims 13-15, Agee discloses the CI receiver system (**multiple access communication system comprising at least one spreader for redundantly modulating at least two RF carriers**, col. 30, lines 49-67) recited in claim 12 wherein at least one of the receiver (**Beam-forming receiver**, col. 14, lines 39-57, Fig. 12) and the combiner includes a spatial processor (**includes a bank of linear combiners**, element 332, Fig. 12) effects spatial processing of at least one of the received modulated carrier signals (**that effect spatial filtering for the received data signal**, col. 14, lines 64-67, col. 15, lines 1-5).

Regarding claim 16, Agee discloses a CI receiver system (**multiple access communication system comprising at least one spreader for redundantly modulating at least two RF carriers**, col. 30, lines 49-67) including:

a receiver (**Beam-forming receiver**, Fig. 12) having at least one receiver element (**demultiplexer bank**, element 330, Fig. 12), the receiver capable of being coupled to at least one communication channel (**a plurality channels received**, col. 14, lines 39-67, Fig. 12), the receiver is responsive to a plurality of CI-modulated carrier signals (**the beam-forming receiver receives stacked carriers**, Fig. 12) modulated with a plurality of information signals (**discrete multi-tones DMT**, col. 13, lines 16-29 and Fig. 11) to generate at least one set of interfering information signals therefrom (**co-channel interference**, col. 14, lines 64-67), each information

signal being characterized by an information-modulated pulse waveform (**discrete multi-tones DMT**, col. 13, lines 16-29 and Fig. 11) produced by a superposition of the plurality of CI-modulated carriers (), and

a multi-channel detector (**demodulator**, element 336, Fig. 12) separates at least one desired signal from at least one interfering signal (**estimates the transmitted message symbols from the received interference**, col. 15, lines 1-20).

Regarding claim 17, Agee discloses the CI receiver system (**multiple access communication system comprising at least one spreader for redundantly modulating at least two RF carriers**, col. 30, lines 49-67) recited in claim 16 wherein at least one of the receiver (**Beam-forming receiver**, col. 14, lines 39-57, Fig. 12) and the multi-channel detector includes a spatial processor (**includes a bank of linear combiners**, element 332, Fig. 12) effects spatial processing of at least one of the received modulated carrier signals (**that effect spatial filtering for the received data signal**, col. 14, lines 64-67, col. 15, lines 1-5).

Response to Arguments

4. Applicant's arguments with respect to claims 1-17 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 703-305-5300. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 703-305-4366. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Seema S. Rao
SEEMA S. RAO 3/20/06
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

Kevin Mew
Work Group 2616